

July 2005

**Department of Energy  
Working Capital Fund**

**Billing System Source Data**

**Issue:**

The Fund Manager seeks to limit potential risks to the WCF billing system that result from erroneous source data and has conducted an analysis of the feeder systems to document their characteristics, to identify and mitigate potential risks, to identify best practices, and to develop opportunities for improvement. Table 1 lists feeder system characteristics by WCF business line.

**Background:**

The Fund Manager uses an MS Access database as an intermediate part of the billing process to aggregate customer billing and financial information maintained by the various Working Capital Fund (WCF) businesses. Billing information is generated in an automated format that can be uploaded to Standard Tracking and Reporting System (STARS). Each individual business is responsible for the operation and maintenance of its respective feeder system. These systems have been designed over time with different levels of complexity and often addressed requirements other than those for WCF billing. They record customer consumption and generate billings based on established pricing policies. Output from these systems is formatted for consistency and ease of entry into MS Access.

Feeder systems record transactions ranging from thirty to nearly three million respectively each month. A few systems produce billings only once or twice each year. Much of the data is provided in MS Excel spreadsheets maintained on individual PCs. Some of the files are integrated databases maintained on central servers or mainframe computers. Findings show practices for backing up data and exercising COOP plans are inconsistent. In some cases, the billing information is automatically generated from the feeder systems; in others, it is manually generated from tables, logs, and other sources. Each feeder system has a point of contact (listed on Table 1). Although we believe that each system could stand up to an independent audit, such audits have not been conducted.

**Risks:**

We identified risks related to business line personnel, errors recording transactions, and system failures. All risks are evaluated against the likelihood of occurrence and the cost of failure. Where risks exist but their values are low there may be no recommended actions. Table 2 records relative values related to each risk factor.

Personnel Turnover: This risk is greatest where billing procedures are both not documented and not shared with other business line employees. Risk increases with new employees not familiar with the data and procedures. As systems are migrated to newer technology, the procedures are not keeping up with the changes.

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Missing transactions and miscoded transactions: This risk is greatest where there are a large number of heterogeneous transactions or poorly documented records of transactions. This type of error increases with number of manual entries required up to and including transfer to the Fund Manager's office.

System failures: This risk is greatest where there is no routine back-up of the feeder system, no COOP in the instance of a catastrophic event, and no storage of historical data.

### **Conclusion:**

The **personnel risks** are related to the sustainability of the billing system if routine personnel are not available to process billing; which risk is mitigated by the existence of documented billing procedures. Building Occupancy, Training Delivery, Mail, Photocopy, Printing and Graphics, and Desktop have no documentation. We recommend that these businesses document their billing procedures. In the meantime, it is crucial that a second business line employee is cross-trained in these duties to eliminate the threat of single point failure.

**Transactions errors** related to erroneous or missing transactions or manual entries are deemed low except for Mail, Photocopy, Closeout, Supplies, and the Phone business. The fund manager should design a study to evaluate these risks further and determine the proper course of action.

**System failures** can be mitigated by maintaining back-up files, historical data, and in extreme cases COOP planning. With few exceptions most of the businesses back-up their billing data and maintain historical data. Those businesses not currently maintaining back-up in an electronic format, separate from the billing system should begin to do so. An adequate measure is the use of shared directories to maintain the file. Since these files are regularly backed-up, they would ensure the availability of data if the billing system were corrupted or lost. Businesses should also begin maintaining electronic historical data files. These measures are probably adequate to protect the billing background, source data, and historical records of transactions without the need to insist on COOP planning beyond the requirements of their line offices.

The fund manager will discuss these issues with the respective businesses at the FY 2005 Third Quarter Reviews and update this analysis on a regular basis.

**Table I: WCF BILLING FEEDER SYSTEMS**

Business Line Descriptions				System Description								Contact Information		
Business Line	Segment	Billing Cycle	Pricing Policy	dB Mgmt Sys	Back Up	Coop	Method Used to Capture Transaction	Number of Transactions/ Month	Automatically Generates WCF Template	Type of Hardwr	Auditable	POC e-mail address	Telephone	Comments
Building Occupancy	Bldg Alterations	Monthly	Direct Charge	Excel	Yes	No	Log	75-100	No	PC	Yes	John.Harrison@hq.doe.gov	6-3611	Engineering Estimates
	Occupancy	Quarterly	Infra. Allocation	CAD/CAM	Yes	No	Negotiated Agreement	N/A	No	PC	Yes	John.Harrison@hq.doe.gov	6-3611	Billing conforms to agreements
Payroll and CHRIS		Annual	Tax	DOEInfo	Yes	Yes	Excel and annual report	N/A	No	Mainframe and PC	Yes	bob.emond@hq.doe.gov	6-2354	Actual record of on-board employees
Corporate Training Services	On-line Learning	Annual	Direct Charge	Word Table/Excel Spreadsheet	No	No	File transfer	N/A	transfers file to WCF spreadsheet	PC	Yes	bonnie.chin@hq.doe.gov	6-9522	solicits subscriptions, respondent sends order for training, requests are maintained in Word Table.
	Training Delivery	Monthly	Direct Charge	CHRIS	Yes	Yes	Manually entered into log	73	No	N/A	Yes	steven.head@hq.doe.gov	6-9512	
Mail	Distribution	Annual	Infra. Allocation	Mail Mgmt Sys	Yes	No	Hand notes, spreadsheets	N/A	No	PC	yes	anthony.nellums@hq.doe.gov	6-6064	
	Postage and Other direct charges	Monthly	Direct Charge	Mail Mgmt Sys	Yes	No	Manually entered into log	26,500	No	PC	Yes	anthony.nellums@hq.doe.gov	6-6064	
Photocopy		Monthly	Direct Charge	Equitracks	Daily	No	Copylog	2,893,382	Yes	PC	Yes	satish.sethi@hq.doe.gov	6-3137	
Printing	Infrastructure	Monthly	Infra. Allocation	Excel (system is under development)	Yes (using Excel)	No	Excel	30	No	PC	Yes	<a href="mailto:s.woodruff@hq.doe.gov">s.woodruff@hq.doe.gov</a>	6-4326	NOOSH, system under development, is being tested.
	Direct Charge	Monthly	Direct Charge	TBD	Yes (using Excel)	No	Excel	91	No	PC	Yes	<a href="mailto:s.woodruff@hq.doe.gov">s.woodruff@hq.doe.gov</a>	6-4326	NOOSH, system under development, is being tested.
Graphics	Infrastructure	Monthly	Infra. Allocation	Easy Web	Yes	Yes	Easy Web	30	No	Mainframe	Yes	satish.sethi@hq.doe.gov	6-3137	
	Direct Charge	Monthly	Direct Charge	Easy Web	Yes	Yes	Easy Web	528	No	Mainframe	Yes	satish.sethi@hq.doe.gov	6-3137	
Procurement Management	Closeout	Monthly	Direct Charge	None	Yes	Yes	Manual process	92	No	PC	No	fred.madison@hq.doe.gov	7-1484	Query of each instrument is the only computerized function.
	Purchase Card Surveillance	Annual	Tax	Feed from Bank of America	None	No	Excel	N/A	No	PC	Yes	bob.emond@hq.doe.gov	6-2354	
Supplies		Monthly	Direct Charge	Major System	Daily		Point of Sale	17,918	Yes	PC	yes	<a href="mailto:silasm@wsifb.com">silasm@wsifb.com</a>	336-759-0551 ex.236	
Information Management/ Telephones/	Infrastructure	Monthly	Infra. Allocation	Major	Yes	No	Excel	30	Yes	PC	Yes	gene.ridenour@hq.doe.gov	3-0975	
	Usage	Monthly	Direct Charge	Major	Yes	Yes	Flat file from Service Provider	942,604	Yes	Mainframe	Yes	gene.ridenour@hq.doe.gov	3-0975	
Information Management/ Desktop Support	Desktop	Monthly	Infra. Allocation	Applix	Yes	No	Converts data from STARS to Quick Book (QB)	268	Yes	PC	Yes	steve.garvey@hq.doe.gov	3-1622	
Information Management/ Network	Infrastructure	Monthly	Infra. Allocation	Major	Yes	Yes	Multiple Sources (flat files, email, disks)	30	Yes	PC	Yes	gene.ridenour@hq.doe.gov	(301) 903-0975	
	DOEnet	Monthly	Mixed Direct and Infra.	Small	Yes	Yes	Entered into spreadsheet	30	transfers vendor's file to WCF template	PC		John.Bullock@hq.doe.gov	3-1004	Computes circuit costs plus percentage of management to determine amount billed.

**Table 2: Evaluation of Risks**

		Personnel		Transaction Errors			System Failures			
Business Line	Segment	Documented Billing Procedures	Cross Training in Billing Procedures	Missing Transactions	Miscoded Transactions	Manual Entries	Routine Back-up	COOP	Historical Data	Comments
Building Occupancy	Bldg Alterations	No	Yes	Low (1)	Low (1)	Low (1)	Yes	No	Yes	
	Occupancy	No	Yes	Low (2)	Low (2)	Low	Yes	No	Yes	
Payroll and CHRIS		Yes (P)	Yes	Low (2)	Low (2)	Low (3)	Yes	Yes	Yes	
Corporate Training Services	On-line Learning	Yes (P)	No	Low (2)	Low (2)	Low (3)	No	No	Yes	
	Training Delivery	No	Yes	Low	Low	Low (3)	Yes	No	Yes	
Mail	Distribution	No	No	Low (2)	Low (2)	Low	Yes	No	Yes	
	Postage and Other direct charges	No	No	Medium	Medium	Low (3)	Yes	No	Yes	
Photocopy		No	No	Medium	Medium	Medium	Yes	No	No	Hardcopy Historical data
Printing	Infrastructure	No	Yes	Low	Low	Low (3)	Yes	No	Yes	Hardcopy Historical data
	Direct Charge	No	Yes	Low (1)	Low (1)	Low	Yes	No	Yes	Hardcopy Historical data
Graphics	Infrastructure	No	No	Low (2)	Low (2)	Low	Yes	No	No	Hardcopy Historical data
	Direct Charge	No	No	Low (1)	Low (1)	Low (1)	Yes	No	No	Hardcopy Historical data
Procurement Management	Closeout	Yes	Yes	Medium	Medium	Low	Yes	No	Yes	
	Purchase Card Surveillance	Yes (P)	Yes	Low (2)	Low (2)	low	Yes	No	Yes	
Supplies				High	High	N/A	Yes	Yes		
Information Management/ Telephones/	Infrastructure	Yes	Yes	Low	Low	N/A	Yes	Yes	Yes	
	Usage	Yes	Yes	High	High	N/A	Yes	Yes	Yes	
Information Management/ Desktop Support	Desktop	No	Yes	Low (3)	Low (3)	N/A	Yes	No	No	
Information Management/	Infrastructure	Yes	Yes	Low	Low	N/A	Yes	Yes	Yes	
	DOEnet	Yes	Yes	Low (2)	Low (2)	Low	Yes	Yes	Yes	

(1) Direct pass-through vendor invoice = customer bill

(2) Computed once/year

(3) Low value transaction

(P) Pricing policy describes billing adequately